FORMULAS INDISPENSABLES

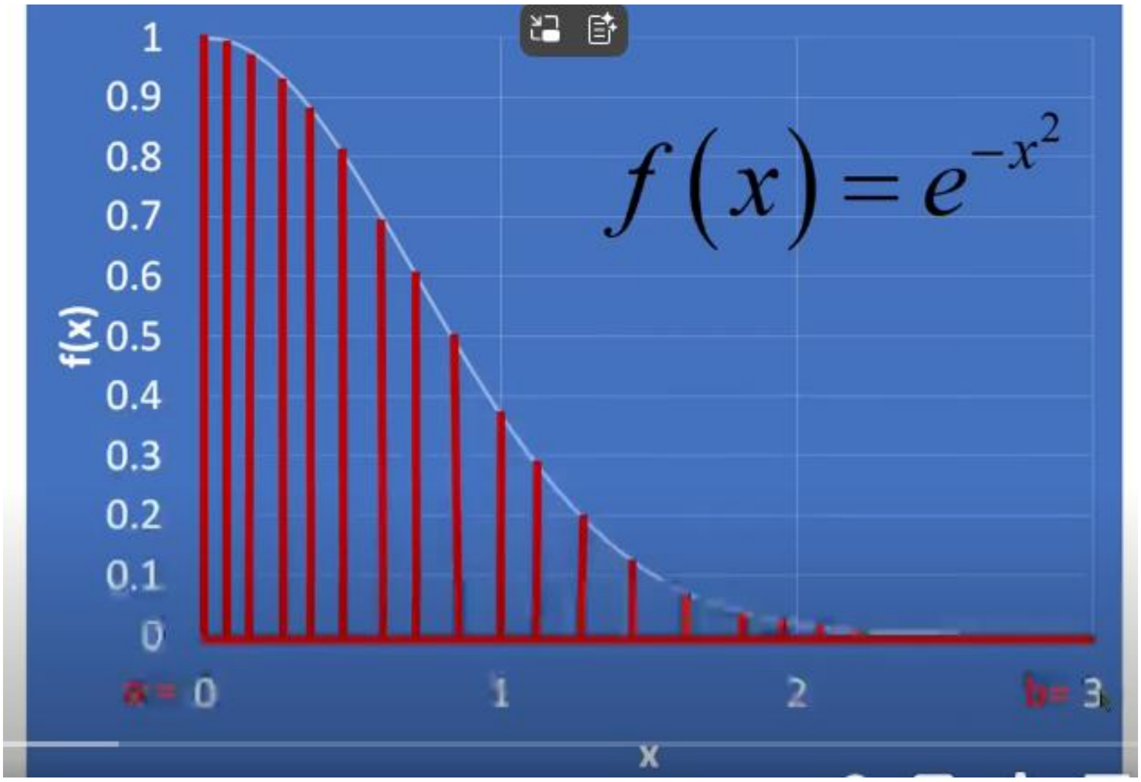
Si *f(x)* es continua en [a, b], entonces

$$A = \frac{\Delta x}{2}\left[f\left(x_0\right) + f\left(x_n\right) + 2\sum_{n=1}^{n-1} f\left(x_i\right) \right]$$

donde $\Delta x = \dfrac{b-a}{n}$ $\qquad x_i = a + n\Delta x$

Evalúa la siguiente integral definida:

$$\int_0^3 e^{-x^2}\,dx$$



Vamos a empezar aplicando la fórmula: $\Delta x=\dfrac{b-a}{n}$

$$\int_0^3 e^{-x^2}\,dx$$

Para este caso vamos a utilizar ***n = 6***

$$\Delta x=\frac{3-0}{6}=0.5$$

La segunda fórmula es

$$x_i = a + n\Delta x$$

n	$X_i = a + n\Delta x$
0	0 + 0(0.5)=0
1	0 + 1 (0.5)= 0.5
2	0 + 2(0.5)=1
3	0 + 3(0.5)=1.5
4	0 + 4(0.5)=2
5	0 +5(0.5)=2.5
6	0 + 6(0.5)=3

n	X_i	$f(x) = e^{-x^2}$
0	0	$e^{-(0)^2} = 1$
1	0.5	$e^{-(0.5)^2} = e^{-0.25} = 0.7788$
2	1	$e^{-(1)^2} = e^{-1} = 0.3678$
3	1.5	$e^{-(1.5)^2} = e^{-2.25} = 0.1053$
4	2	$e^{-(2)^2} = e^{-4} = 0.0183$
5	2.5	$e^{-(2.5)^2} = e^{-6.25} = 0.00193$
6	3	$e^{-(3)^2} = e^{-9} = 0.000123$

n	X_i	F(x)
0	0	1
1	0.5	0.7788
2	1	0.3678
3	1.5	0.1053
4	2	0.0183
5	2.5	0.00193
6	5	0.000123

$$A = \frac{\Delta x}{2}\left[f(x_0) + f(x_n) + 2\sum_{n=1}^{n-1} f(x_i) \right]$$

$$A = \frac{0.5}{2}\left[1 + 0.000123 + 2(1.27213)\right]$$

$$A = 0.8861u^2$$